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UNITED STATES PATENT AND TRADEMARK OFFICE

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10/601,258	06/19/2003	Wolfgang Stephan	34874-165 UTIL	6725

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ART UNIT	PAPER NUMBER
2162	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/19/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

Office Action Summary	Application No.	Applicant(s)
	10/601,258	STEPHAN, WOLFGANG
	Examiner	Art Unit
	Giovanna Colan	2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>16 October 2006</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-60</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>29 March 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This action is issued in response to applicant filed request for continued examination (RCE) on 10/16/2006.

2.   Claims 1 – 3, 5, 8, 12, 15 – 17, 19, 25, 27, 29, 31, 33, 37, 39, 41, 44, 48, 51, 53, and 55 have been amended. No claims were added. No claims were canceled.

3.   Claims 1 – 60 are pending in this application.

4.   Applicant's arguments filed 09/18/2006 have been fully considered but they are not persuasive.

Continued Examination Under 37 CFR 1.114

5.   A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/11/2006 has been entered.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

7.   Claims 3, 5, 8, 12, 17, 19, 27, 29, 31, 39, 41, 44, 48, 53, and 55 are rejected

under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly

point out and distinctly claim the subject matter which applicant regards as the

invention.

8.   Claims 8, 31, and 44 recite the limitation " x is in a first range of 256 to 512 and y

is in a second range of 128 to 256 " in lines 1 – 2. The lowest range value of x "256" is

the same as the highest range value of y "256", which implies that the value of x could

be 256, and the value of y could be 256. Furthermore, the limitation of claims 7, and 43

discloses that, "y is less than x". Examiner is unclear how x and y can both be the same

value, such as 256, and still meet the requirement of: "y is less than x". This results in a

contracting limitation, and therefore invalid. This renders the claims indefinite.

Appropriate action is required.

Claim Rejections - 35 USC § 102

9.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10.   **Claim 1 – 7, 9 –14, 16 – 30, 32 – 43, and 45 – 50, 52 – 60 are rejected under**

35 U.S.C. 102(e) as being anticipated by Broder et al. (Broder hereinafter) (US

Patent Application Pub No. 2004/0243560 A1, filed: May 30, 2003).

Regarding Claim 1 and 37, Broder discloses an article comprising a machine-

readable medium storing instructions operable to cause one or more machines to

perform operations comprising:

determining a value x such that at least a majority of the index terms occur in x

documents or fewer (Page 17 and 18, [0307] and [0314], lines 1 – 3 and 3 – 9;

respectively, Broder[1]), where x is an integer (Page 10, [0182], lines 6 – 8, Broder);

determining a value y, where y does not exceed x (Page 15, [0277], lines 1 – 2, **k**

be the smallest index, Broder), where y is an integer (Page 10, [0182], lines 6 – 8,

Broder);

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[1] Wherein the top "n" documents corresponds to the documents with the majority of index terms claimed; specifically "n" corresponds to the value x claimed. The scoring procedure utilized by Broder (as disclosed in detailed in Page 16, [0286], lines 5 – 6, Broder) including terms associations with upper bounds on its

generating an inverted index for the collection of documents (Page 9, [0162],

lines 1 – 3, Broder), the inverted index including an inverted list for each of the index

terms (Page 14, [0244], lines 2 – 3, Broder), each inverted list including at least one

posting (Page 14, [0244], lines 2 – 5, Broder) and, if the number of postings exceeds x

(Page 14, [0245], lines 7 – 10, Broder[2]), further including a skip entry after the xth

posting (Page 14, [0245], lines 10 – 12, Broder) and one or more skip entries thereafter

at intervals of every yth posting (Page 15, [0277], lines 1 – 6, Broder[3]);

wherein:

a posting includes a document identifier identifying a document in the

collection of documents (Page 14, [0244], lines 1 – 6, document unique identifier DID,

Broder);

a skip entry includes a document identifier that is included in a boundary

posting of a block of postings immediately adjacent to the skip entry in the inverted list

(Page 15, [0277], lines 1 – 6, Border[4]), where a block of postings includes postings

having document identifiers ranging from a lower to an upper value and where a

boundary posting is a posting having a document identifier of either the lower or the

upper value (Page 16 and 18, [0286] and [0314], lines 5 – 9 and 3 – 9; respectively,

Broder).

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maximal contribution to documents scores; wherein the maximal contributing of index terms corresponds to the majority of the index terms as claimed.

[2]Broder discloses that the method next(id) (page 14, [0245], lines 8 – 10). This method states that if there is **not** such document which DID >=id (where DID = number of documents, and id = number of posting), then the term iterator returns a special posting that is larger than all the existing DIDs. This implies that, if there is DID < id (the number of postings exceeds the number of documents entered), then the iterator returns the special posting mentioned above.

[3] The cursor is advanced to the position of k value. There is a skip entry at the kth value.

Regarding Claims 2, and 38, Broder discloses a method, wherein each posting further includes a position identifier identifying a position of the index term in the document (Page 14, [0244], lines 8 – 9, offsets of occurrences, Broder), and a frequency of the index term occurring in the document (Page 14 and 18, [0244] and [0316], lines 7 – 8 and 9 – 11, number of occurrences of the terms/ frequency; respectively, Broder).

Regarding Claims 3, and 39, Broder discloses a method, wherein the boundary posting includes a document identifier having the lower value in the range of values and the block of postings follow the skip entry in the inverted list (Fig. 27, item 5, Page 16 and 17, [0301], lines 10 – 18, Broder[5]).

Regarding Claims 4, and 40, Broder discloses a method, wherein the skip entry further includes information to locate the next skip entry in the inverted list (Fig. 27, items 13 and 22, Broder[6]).

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[4] Wherein doc_i corresponds to the document identifier claimed. In addition, the step of advancing the cursor to next doc_l k corresponds to the step of

[5] According to Broder, the pivot DID is the smallest DID that might be a candidate (Page 17, [0301], lines 17 – 18). In addition, Broder discloses that this pivot term goes through an "if" statement which finds a first pivot term with UB (upper bound) greater than the threshold (Fig. 27, item 5). This implies that the "next" method will return the smallest possible document number following the last one. In addition, the smallest document number corresponds to the lower value claimed.

[6] Posting[aterm] (located in the function next()) represents the information to locate next skip entry.

Regarding Claims 5, and 41, Broder discloses a method, wherein the boundary posting includes a document identifier having the higher value in the range of values and the block of postings precede the skip entry in the inverted list (Page 17, [0302], lines 22 – 26, Broder[7]).

Regarding Claims 6, and 42, Broder discloses a method, wherein the skip entry further includes information to locate the next skip entry in the inverted list (Fig. 27, items 13 and 22, Broder[8]).

Regarding Claims 7, and 43, Broder discloses a method including all the limitations of claim 1, and 37, as disclosed above, wherein y is less than x (Page 15, [0277], lines 1 – 2, k be the smallest index, Broder).

Regarding Claims 9, and 45, Broder discloses a method, wherein the collection of one or more documents includes one or more binary files, data tables, source code files, text documents or combinations thereof (Page 9, [0158], lines 1 – 13, Broder).

Regarding Claims 10, and 46, Broder discloses a method including all the limitations of claim 1, and 37, as disclosed above, further comprising:

compressing the inverted index (Page 15, [0273], lines 1 – 3, zipping, Broder).

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[7] The next() function iterates trough the list and selects from the preceding terms the term with the location greater (largest document number of documents) than the pivot location. Wherein the location greater (largest document number of documents) than the pivot location corresponds to the higher value as claimed.

Regarding Claims 11, and 47, Broder discloses a method, wherein substantially all of the index terms occur in x documents or fewer (Page 15, [0257], lines 14 – 16, Broder).

Regarding Claims 12, and 48, Broder discloses a method, wherein at least approximately 80% of the index terms occur in x documents (Page 17, [0307], lines 1 – 3, top n results, Broder).

Regarding Claims 13, and 49, Broder discloses a method, wherein for each inverted list, if the number of postings exceeds x, further including a skip entry before the first posting in the inverted list (Page 15, [0257], lines 12 – 20, the result is inserted, Broder).

Regarding Claims 14, and 50, Broder discloses a method, wherein for each inverted list, if the number of postings exceeds x (Page 14, [0245], lines 7 – 10, Broder[9]), further including a skip entry after the last posting in the inverted list (Page 14, [0245], lines 10 – 12, Broder).

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[8] Posting[aterm] (located in the function next()) represents the information to locate next skip entry.
[9]Broder discloses that the method next(id) (page 14, [0245], lines 8 – 10). This method states that if there is **not** such document which DID >=id (where DID = number of documents, and id = number of posting), then the term iterator returns a special posting that is larger than all the existing DIDs. This implies that, if there is DID < id (the number of postings exceeds the number of documents entered), then the iterator returns the special posting mentioned above.

Regarding Claims 16, and 52, Broder discloses a method, wherein each posting

further includes, a position identifier identifying a position of the index term in the

document (Page 14, [0244], lines 8 – 9, offsets of occurrences, Broder), and a

frequency of the index term occurring in the document (Page 14 and 18, [0244] and

[0316], lines 7 – 8 and 9 – 11, number of occurrences of the terms/ frequency;

respectively, Broder).

Regarding Claims 17, and 53, Broder discloses a method, wherein wherein the

boundary posting includes a document identifier having the lower value in the range of

values and the block of postings follow the skip entry in the inverted list (Fig. 27, item 5,

Page 16 and 17, [0301], lines 10 – 18, Broder[10]).

Regarding Claims 18, and 54, Broder discloses a method, wherein the skip entry

further includes information to locate the next skip entry in the inverted list (Fig. 27,

items 13 and 22, Broder[11]).

Regarding Claims 19, and 55, Broder discloses a method, wherein the boundary

posting includes a document identifier having the higher value in the range of values

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[10] According to Broder, the pivot DID is the smallest DID that might be a candidate (Page 17, [0301], lines 17 – 18). In addition, Broder discloses that this pivot term goes through an "if" statement which finds a first pivot term with UB (upper bound) greater than the threshold (Fig. 27, item 5). This implies that the "next" method will return the smallest possible document number following the last one. In addition, the smallest document number corresponds to the lower value claimed.
[11] Posting[aterm] (located in the function next()) represents the information to locate next skip entry.

and the block of postings precede the skip entry in the inverted list (Page 17, [0302],

lines 22 – 26, Broder[12]).

.Regarding Claims 20, and 56, Broder discloses a method, wherein the skip entry

further includes information to locate the next skip entry in the inverted list (Fig. 27,

items 13 and 22, Broder[13]).

Regarding Claims 21, and 57, Broder discloses a method, wherein substantially

all of the index terms occur in x documents or fewer (Page 15, [0257], lines 14 – 16,

Broder).

Regarding Claims 22, and 58, Broder discloses a method, wherein approximately

80 to 90% of the index terms occur in x documents or fewer (Page 17, [0307], lines 1 –

3, top n results, Broder).

Regarding Claims 23, and 59, Broder discloses a method, wherein for each

inverted list, if the number of postings exceeds x, further including a skip entry before

the first posting in the inverted list (Page 15, [0257], lines 12 – 20, the result is inserted,

Broder).

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[12] The next() function iterates trough the list and selects from the preceding terms the term with the
location greater (largest document number of documents) than the pivot location. Wherein the location
greater (largest document number of documents) than the pivot location corresponds to the higher value
as claimed.
[13] Posting[aterm] (located in the function next()) represents the information to locate next skip entry.

Regarding Claims 24, and 60, Broder discloses a method, wherein for each inverted list, if the number of postings exceeds x (Page 14, [0245], lines 7 – 10, Broder[14]), further including a skip entry after the last posting in the inverted list (Page 14, [0245], lines 10 – 12, Broder).

Regarding Claim 25, Broder discloses an inverted index for a collection of documents (Page 9, [0162], lines 1 – 3, Broder), each document comprising one or more index terms (Page 14, [0244], lines 3 – 5, Broder), the inverted index comprising:

an inverted list for each index term in the collection of documents (Page 14, [0244], lines 2 – 3, Broder); and

one or more inverted lists including a quantity of postings (Page 14, [0244], lines 2 – 5, Broder) that exceeds a value x (Page 14, [0245], lines 7 – 10, Broder), a skip entry after the xth posting (Page 14, [0245], lines 10 – 12, Broder), and one or more additional skip entries thereafter at intervals of every yth posting (Page 15, [0277], lines 1 – 6, Broder[15]), where the value x is such that at least a majority of the index terms occur in x documents or fewer (Page 17 and 18, [0307] and [0314], lines 1 – 3 and 3 – 9; respectively, Broder[16]) and the value y does not exceed the value x (Page 15, [0277], lines 1 – 2, Broder[17]) and x and y are integers;

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[14]Broder discloses that the method next(id) (page 14, [0245], lines 8 – 10). This method states that if there is **not** such document which DID >=id (where DID = number of documents, and id = number of posting), then the term iterator returns a special posting that is larger than all the existing DIDs. This implies that, if there is DID < id (the number of postings exceeds the number of documents entered), then the iterator returns the special posting mentioned above.

[15] The cursor is advanced to the position of k value. There is a skip entry at the kth value.

[16] Wherein the top "n" documents corresponds to the documents with the majority of index terms claimed; specifically "n" corresponds to the value x claimed. The scoring procedure utilized by Broder (as disclosed in detailed in Page 16, [0286], lines 5 – 6, Broder) including terms associations with upper bounds on its

wherein:

a posting includes a document identifier identifying a document in the collection of documents (Page 14, [0244], lines 1 – 6, document unique identifier DID, Broder);

a skip entry includes a document identifier that is included in a boundary posting of a block of postings immediately adjacent to the skip entry in the inverted list (Page 15, [0277], lines 1 – 6, Border[18]), where a block of postings includes postings having document identifiers ranging from a lower to an upper value and where a boundary posting is a posting having a document identifier of either the lower or the upper value (Page 16 and 18, [0286] and [0314], lines 5 – 9 and 3 – 9; respectively, Broder).

Regarding Claim 26, Broder discloses an inverted index, wherein each posting further includes position identifier identifying a position of the index term in the document (Page 14, [0244], lines 8 – 9, offsets of occurrences, Broder), and a frequency of the index term occurring in the document (Page 14 and 18, [0244] and [0316], lines 7 – 8 and 9 – 11, number of occurrences of the terms/ frequency; respectively, Broder).

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maximal contribution to documents scores; wherein the maximal contributing of index terms corresponds to the majority of the index terms as claimed.

[17] Y would be the **smallest index k**. And x would be the top n documents (the size of the heap) (Page 15, [0257], lines 15 – 16).

[18] Wherein doc_i corresponds to the document identifier claimed. In addition; the step of advancing the cursor to next doc_l k corresponds to the step of

Regarding Claim 27, Broder discloses an inverted index, wherein the boundary posting includes a document identifier having the lower value in the range of values and the block of postings follow the skip entry in the inverted list (Fig. 27, item 5, Page 16 and 17, [0301], lines 10 – 18, Broder[19]).

Regarding Claim 28, Broder discloses an inverted index, wherein the skip entry further includes information to locate the next skip entry in the inverted list (Fig. 27, items 13 and 22, Broder[20]).

Regarding Claim 29, Broder discloses an inverted index, wherein the boundary posting includes a document identifier having the higher value in the range of values and the block of postings precede the skip entry in the inverted list (Page 17, [0302], lines 22 – 26, Broder[21])

Regarding Claim 30, Broder discloses an inverted index, as disclosed above, wherein the skip entry further includes information to locate the next skip entry in the inverted list (Fig. 27, items 13 and 22, Broder[22]).

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[19] According to Broder, the pivot DID is the smallest DID that might be a candidate (Page 17, [0301], lines 17 – 18). In addition, Broder discloses that this pivot term goes through an "if" statement which finds a first pivot term with UB (upper bound) greater than the threshold (Fig. 27, item 5). This implies that the "next" method will return the smallest possible document number following the last one. In addition, the smallest document number corresponds to the lower value claimed.

[20] Posting[aterm] (located in the function next()) represents the information to locate next skip entry.

[21] The next() function iterates trough the list and selects from the preceding terms the term with the location greater (largest document number of documents) than the pivot location. Wherein the location greater (largest document number of documents) than the pivot location corresponds to the higher value as claimed.

[22] Posting[aterm] (located in the function next()) represents the information to locate next skip entry.

Regarding Claim 32, Broder discloses an inverted index, wherein substantially all of the index terms occur in x documents or fewer (Page 15, [0257], lines 14 – 16, Broder).

Regarding Claim 33, Broder discloses an inverted index, wherein approximately 80% of the index terms occur in x documents (Page 17, [0307], lines 1 – 3, top n results, Broder).

Regarding Claim 34, Broder discloses an inverted index, wherein the collection of one or more documents includes one or more binary files, data tables, source code files, text documents or combinations thereof (Page 9, [0158], lines 1 – 13, Broder).

Regarding Claim 35, Broder discloses an inverted index, wherein the one or more inverted lists further include a skip entry before the first posting in the inverted list (Page 15, [0257], lines 12 – 20, the result is inserted, Broder).

Regarding Claim 36, Broder discloses an inverted index, wherein the one or more inverted lists further include a skip entry after the last posting in the inverted list (Page 14, [0245], lines 10 – 12, Broder).

Claim Rejections - 35 USC § 103

11.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

12.   **Claim 8, 15, 31, 44, and 51 arerejected under 35 U.S.C. 103(a) as being**

unpatentable over Broder et al. (Broder hereinafter) (US Patent Application Pub

No. 2004/0243560 A1, filed: May 30, 2003) in view of Young et al. (Young

hereinafter) (US Patent No. 5,838,950, issued: November 17, 1998).

Regarding Claim 8, and 44, Broder discloses all the limitations as disclosed

above. However, Broder is silent with respect to a first range of 256 to 512 and a

second range of 128 to 256. On the other hand, Young discloses a system including bits

and bytes including ranges of 256 to 512, and of 128 to 256 (Col. 140, lines 30 – 43,

Young). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to incorporate the Young's teachings to the system of Broder.

Skilled artisan would have been motivated to do so, as suggested by Young ((Col. 4,

lines 1 – 5 and 38 – 43,Young), to provide a higher speed system, "leading" address

byte offset to a specified bit boundary, and "trailing" address byte offsets. In addition,

both of the references (Broder and Young) teach features that are directed to analogous

art and they are directed to the same field of endeavor of database management

system, such as, data manipulation and indexing. This relation between both of the

references highly suggests an expectation of success.

Regarding Claim 15, and 51, the Broder in view of Young combination

("Broder/Young" hereinafter) discloses an article comprising a machine-readable

medium storing instructions operable to cause one or more machines to perform

operations comprising:

receiving a collection of documents, each document comprising one or more

index terms (Page 14, [0244], lines 3 – 5, Broder);

determining a value x, wherein at least a majority of the index terms occur in x

documents or fewer (Page 17 and 18, [0307] and [0314], lines 1 – 3 and 3 – 9;

respectively, Broder[23]) and x is an integer (Page 10, [0182], lines 6 – 8, Broder) in a first

range of 256 to 512 (Col. 140, lines 30 – 43, Young);

determining a value y, wherein **y** does not exceed the value of x (Page 15,

[0277], lines 1 – 2, **k be the smallest** index, Broder) and is an integer (Page 10, [0182],

lines 6 – 8, Broder) in a second range of 128 to 256 (Col. 140, lines 30 – 43, Young);

generating an inverted index for the collection of documents (Page 9, [0162],

lines 1 – 3, Broder), the inverted index including an inverted list for each of the index

terms (Page 14, [0244], lines 2 – 3, Broder), each inverted list including at least one

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[23] Wherein the top "n" documents corresponds to the documents with the majority of index terms claimed; specifically "n" corresponds to the value x claimed. The scoring procedure utilized by Broder (as disclosed in detailed in Page 16, [0286], lines 5 – 6, Broder) including terms associations with upper bounds on its

posting (Page 14, [0244], lines 2 – 5, Broder) and, if the number of postings exceeds x

(Page 14, [0245], lines 7 – 10, Broder[24]), further including a skip entry after the xth

posting (Page 14, [0245], lines 10 – 12, Broder) and one or more skip entries thereafter

at intervals of every yth posting (Page 15, [0277], lines 1 – 6, Broder[25]).

wherein:

a posting includes a document identifier identifying a document in the

collection of documents (Page 14, [0244], lines 1 – 6, document unique identifier DID,

Broder);

a skip entry includes a document identifier that is included in a boundary

posting of a block of postings immediately adjacent to the skip entry in the inverted list

(Page 15, [0277], lines 1 – 6, Border[26]), where a block of postings includes postings

having document identifiers ranging from a lower to an upper value and where a

boundary posting is a posting having a document identifier of either the lower or the

upper value (Page 16 and 18, [0286] and [0314], lines 5 – 9 and 3 – 9; respectively,

Broder).

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maximal contribution to documents scores; wherein the maximal contributing of index terms corresponds to the majority of the index terms as claimed.
[24]Broder discloses that the method next(id) (page 14, [0245], lines 8 – 10). This method states that if there is **not** such document which DID >=id (where DID = number of documents, and id = number of posting), then the term iterator returns a special posting that is larger than all the existing DIDs. This implies that, if there is DID < id (the number of postings exceeds the number of documents entered), then the iterator returns the special posting mentioned above.
[25] The cursor is advanced to the position of k value. There is a skip entry at the kth value.
[26] Wherein doc_i corresponds to the document identifier claimed. In addition, the step of advancing the cursor to next doc_l k corresponds to the step of

Additional limitations of claims 15 and 51, not included above, have been rejected under the same criteria as claims 8, 31, and 44 (See claims 8, 31, and 44 - *Claim Rejections - 35 USC § 112*- listed on this office action).

Regarding Claim 31, Broder/Young discloses an inverted index of claim 25, wherein x is in a first range of 256 to 512 and y is in a second range of 128 to 256 (Col. 140, lines 30 – 43, Young).

Response to Arguments

1.   Applicant argues that the prior art fails to disclose; "determining a value x such

that at least a majority of the index terms occur in x documents or fewer, where x is an

integer".

Examiner respectfully disagrees. As discussed in the Final Office Action dated

May 18, 2006, the applied prior art Broder does disclose determining a value x such that

at least a majority of the index terms occur in x documents or fewer (Page 17 and 18,

[0307] and [0314], lines 1 – 3 and 3 – 9; respectively, Broder). Wherein the top "n"

documents corresponds to the documents with the majority of index terms claimed;

specifically "n" corresponds to the value x claimed. The scoring procedure utilized by

Broder (as disclosed in detailed in Page 16, [0286], lines 5 – 6, Broder) including terms

associations with upper bounds on its maximal contribution to documents scores;

wherein the maximal contributing of index terms corresponds to the majority of the index

terms as claimed. Broder's procedure further specifies that these terms are index terms

(Page 16, [0289], lines 1 – 3, Broder). In addition, in the case of Broder's disclosure, the

step of finding the top "n" documents and/or results for a given query, which includes

terms, implies the utilization of a step which finds this value of "n" documents such that

the majority of these terms occur in this "n" values. Therefore, Broder does disclose

such limitation of claim 1.

2.   Applicant argues that the prior art fails to disclose; "generating step since it recites the determined x value.

Examiner respectfully disagrees. As discussed in the Final Office Action dated May 18, 2006, the applied prior art Broder does disclose the step of: generating an inverted index for the collection of documents (Page 9, [0162], lines 1 – 3, Broder), the inverted index including an inverted list for each of the index terms (Page 14, [0244], lines 2 – 3, Broder), each inverted list including at least one posting (Page 14, [0244], lines 2 – 5, Broder) and, if the number of postings exceeds x (Page 14, [0245], lines 7 – 10, Broder), further including a skip entry after the xth posting (Page 14, [0245], lines 10 – 12, Broder) and one or more skip entries thereafter at intervals of every yth posting (Page 15, [0277], lines 1 – 6, Broder). Wherein the next (id) method (Page 14, [0245], lines 8 – 10) corresponds to the step including if the number of postings exceeds x claimed. This method, next (id), states that if there is **not** such document which DID >=id (where DID = number of documents, and id = number of posting), then the term iterator returns a special posting that is larger than all the existing DIDs. This implies that, if there is DID < id (the number of postings exceeds the number of documents entered), then the iterator returns the special posting mentioned above.

3.   Applicant argues that the office action fails to disclose *prima facie* case of obviousness.

Examiner respectfully disagrees. According to MPEP § 2142, to establish *prima facie* case of obviousness three basic criteria must be met. **First**, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. The prior art discloses a suggestion for combining the references (Col. 4, lines 1 – 5 and 38 – 43,Young).

As suggested by Young, skilled artisan would have been motivated to make such combination, to provide a higher speed system, "leading" address byte offset to a specified bit boundary, and "trailing" address byte offsets. **Second**, there must be a reasonable expectation of success. The prior art suggests a successful outcome of this combination, such as, a higher speed system. **Third**, both of the references (Broder and Young) teach features that are directed to the same industry field of database management systems, such as, data manipulation, and indexing. This close relation between both of the references highly suggests an expectation of success. Therefore, the combination of Broder in view of Young discloses all the claim limitations disclosed in the claimed invention (see- citations of claims 1 – 60 above).

Prior art Made of Record

1.   Broder et al. (US Patent Application Pub. No. 2004/0243560 A1) discloses a system, method and computer program product for performing unstructured information management and automatic text analysis, including an annotation inverted file system facilitating indexing and searching.

2.   Antoshenkov (US Patent No. 6,439,783 B1) discloses a range-based query optimizer.

3.   Huynh et al. (US Patent No. 5,539,899) discloses a system and method for handling a segmented program in a memory for a multitasking data processing system utilizing paged virtual storage.

4.   Young et al. (US Patent No. 5,838,950) discloses a method of operation of a host adapter integrated circuit.

Points Of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Giovanna Colan whose telephone number is (571) 272-2752. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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